

WHAT IS CLAIMED IS:

1. A tilt adjustable steering column assembly for an automotive vehicle, comprising:
 - 5 an elongated jacket tubular member having a tilt rotation axle at one end thereof; - a fixed bracket placed at a predetermined middle position of the jacket tubular member and having an engagement portion that is engaged with a tilt input axle mounted on the jacket tubular member; - 10 a bell crank lever having a rotation center axle rotatably supported on the fixed bracket and rotatably supports the tilt input axle of the jacket tubular member on one arm thereof; and
15 an actuator having a rod portion to operatively move to pivot the bell crank lever, the fixed bracket supporting the rotation center axle of the bell crank lever to enable the rotation center axle of the bell crank lever to swing with respect to the fixed bracket and the engagement portion of the elongated hole being formed to coincide with a pivotal orbit of the tilt input axle about the tilt
20 rotation center of the jacket tubular member. - 25
2. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 1, wherein the tilt adjustable steering column assembly further comprises an eccentric bush interposed between the
30 rotation center axle of the bell crank lever and fixed bracket, the rotation center axle of the bell

crank lever being enabled to swing with respect to the fixed bracket via the eccentric bush.

3. A tilt adjustable steering column assembly for
5 an automotive vehicle as claimed in claim 2, wherein a predetermined eccentric distance is provided between a rotation center axis of the eccentric bush and a center of the rotation center axle of the bell crank lever.

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4. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 3, wherein a curvature of a center line in an elongated direction of the elongated hole is made coincident
15 with a curvature of the pivotal orbit of the tilt input axle.

5. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 3, wherein
20 the predetermined eccentric distance is a distance provided for a compensation for an error distance (U) between a rotation orbit of the tilt input axle, with an axial distance between the center of the rotation center axle of the bell crank lever and the tilt
25 input axle as a radius of curvature, and the center line of the elongated hole.

6. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 5, wherein
30 a guide member is attached around the elongated hole.

7. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 4, wherein

the jacket tubular member has the other end thereof opposite to the one end thereof to attach a steering wheel of the vehicle.

5 8. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 2, wherein the elongated hole is of a substantially ellipse shape.

10 9. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 2, wherein the fixed bracket is fixed onto a vehicle body, the tilt rotation center axle of the jacket tubular member is rotatably supported on a vehicular body
15 forward bracket fixed onto the vehicle body via a first auxiliary bracket, and a second auxiliary bracket is interposed between the one arm of the bell crank lever and the jacket tubular member.

20 10. A tilt adjustable steering column assembly for an automotive vehicle as claimed in claim 9, wherein a first turning pair point (D) is provided between the rotation center (S) of the eccentric bush and the fixed bracket (8) and, a second turning pair
25 point (C) is provided between the eccentric bush and rotation center axle of the bell crank lever, a third turning pair point (A) is provided between the tilt input axle and the one end of the bell crank lever, a fourth turning pair point (B) is provided between the
30 tilt rotation center axle and the vehicular body forward bracket, a fifth turning pair point (E) is provided between the other arm of the bell crank lever and the rod portion of the actuator, and a

sixth turning pair point (F) is provided between a main body portion of the actuator and the jacket tubular member and wherein, when a distance between the fifth turning pair point (E) and the sixth
5 turning pair point (E) and the sixth turning pair point (F) is varied by means of the actuator, the second turning pair point (C) is pivoted about the first turning pair point (D) and, simultaneously, the third turning pair point (A) is pivoted about the
10 fourth turning pair point (B) with the second turning pair point (C) as a fulcrum so as to tilt the steering wheel in a vertical direction thereof.

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